

Serial No. 09/965,538

June 14, 2004

Reply to the Office Action dated March 5, 2004

Page 2 of 11

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A surface-mountable PTC thermistor element comprising:

a thermistor element body including a top surface and a bottom surface;
electrodes disposed on the top surface and the bottom surface of the thermistor element body;

lower and upper terminals arranged such that each of the electrodes is connected with a respective one of the lower and upper terminals, and each of the lower and upper terminals is extended downward; wherein

said lower terminal includes a junction portion ~~contacting said thermistor element body~~, a short vertical-leg portion bent vertically in a downward direction at an angle of about 90° relative to the surface of said thermistor element body such that the short vertical-leg portion extends substantially perpendicular to the surface of the thermistor element body ~~over substantially the entire length of the short vertical-leg portion~~, and a lower-end portion which extends substantially parallel to the junction portion and substantially perpendicular to the short vertical-leg portion;

said short vertical-leg portion is directly connected and extends directly between the junction portion and the lower-end portion;

the junction portion of the lower terminal is mechanically attached to one of the electrodes;

the upper and lower terminals contact only the electrodes on the top and bottom surfaces of the thermistor element body and a mounting surface when the surface-

Serial No. 09/965,538

June 14, 2004

Reply to the Office Action dated March 5, 2004

Page 3 of 11

mountable PTC thermistor element is mounted on the mounting surface; and

said vertical-leg portion of the lower terminal is located in the vicinity of the center of the thermistor element body so as to be spaced inwardly from a periphery of the thermistor element body.

Claim 2 (canceled).

Claim 3 (original): A surface-mountable PTC thermistor element according to Claim 1, wherein a junction portion of the upper terminal and one of the electrodes are arranged to overlap each other at a central portion of the thermistor element body.

Claim 4 (original): A surface-mountable PTC thermistor element according to Claim 1, wherein the thermistor element body has a substantially round button shape.

Claim 5 (original): A surface-mountable PTC thermistor element according to Claim 1, wherein each of the electrodes includes a nickel layer and a silver layer.

Claim 6 (original): A surface-mountable PTC thermistor according to Claim 1, wherein each of the terminals has a flat-plate shaped configuration and is made of stainless steel.

Claim 7 (currently amended): A surface-mountable PTC thermistor according to Claim 1, wherein at the lower end of the vertical-leg portion of the lower terminal is bent to define defines a horizontal connection portion arranged to be connected to the mounting surface.

Claim 8 (currently amended): A surface-mountable PTC thermistor according to Claim 1, wherein the ~~lower terminal has a junction portion~~ of the lower terminal is

Serial No. 09/965,538

June 14, 2004

Reply to the Office Action dated March 5, 2004

Page 4 of 11

connected with one of the electrodes at a location only near the central portion of the thermistor element body.

Claim 9 (original): A surface-mountable PTC thermistor according to Claim 1, wherein the upper terminal includes a vertical-leg portion that is longer than the vertical-leg portion of the lower terminal.

Claim 10 (original): A surface-mountable PTC thermistor according to Claim 9, wherein a lower end of the vertical-leg portion of the upper terminal is bent to define a horizontal connection portion.

Claims 11-20 (canceled).

Claim 21 (new): A surface-mountable PTC thermistor element comprising:
a thermistor element body including a top surface and a bottom surface;
electrodes disposed on the top surface and the bottom surface of the thermistor element body;

lower and upper terminals arranged such that each of the electrodes is connected with a respective one of the lower and upper terminals, and each of the lower and upper terminals is extended downward; wherein

said upper terminal includes a junction portion contacting the electrode located on the top surface of the thermistor element body, and a vertical-leg portion extending substantially perpendicularly from an end of the junction portion;

said lower terminal includes a junction portion contacting the electrode located on the bottom surface of the thermistor element body, and a vertical-leg portion extending substantially perpendicularly from an end of the junction portion of said lower terminal;

said vertical-leg portion of said upper terminal is longer than said vertical-leg portion of said lower terminal;

Serial No. 09/965,538

June 14, 2004

Reply to the Office Action dated March 5, 2004

Page 5 of 11

a lower end of said vertical-leg portion of said upper terminal is located in a common plane with a lower end of said vertical-leg portion of said lower terminal, the common plane being substantially parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon which the surface-mountable PTC thermistor element is mounted;

said junction portion of said upper terminal and said junction portion of said lower terminal overlap with each other at a central portion of said thermistor element body with the thermistor element body disposed therebetween;

the upper and lower terminals contact only the electrodes on the upper and lower surfaces of the thermistor element body and the mounting surface when the surface mountable PTC thermistor element is mounted on the mounting surface.

Claim 22 (new): A surface-mountable PTC thermistor according to Claim 21, wherein said vertical-leg portions of said upper and lower terminals are arranged to be directly mounted to the mounting surface of the substrate.

Claim 23 (new): A surface-mountable PTC thermistor according to Claim 21, wherein said vertical-leg portion of the lower terminal is located in the vicinity of the center of the thermistor element body so as to be spaced inwardly from a periphery of the thermistor element body.

Claim 24 (new): A surface-mountable PTC thermistor according to Claim 21, wherein said upper terminal includes a horizontal connection portion extending substantially perpendicularly from an end of said vertical-leg portion of said upper terminal and substantially parallel to said junction portion of said upper terminal, the horizontal connection portion being arranged to be mounted on the mounting surface of the substrate.

Serial No. 09/965,538

June 14, 2004

Reply to the Office Action dated March 5, 2004

Page 6 of 11

Claim 25 (new): A surface-mountable PTC thermistor according to Claim 21, wherein said lower terminal includes a horizontal connection portion extending substantially perpendicularly from an end of said vertical-leg portion of said lower terminal and substantially parallel to said junction portion of said lower terminal, the horizontal connection portion being arranged to be mounted on the mounting surface of the substrate.

Claim 26 (new): A surface-mountable PTC thermistor element according to Claim 21, wherein the thermistor element body has a substantially round button shape.

Claim 27 (new): A surface-mountable PTC thermistor element according to Claim 21, wherein each of the electrodes includes a nickel layer and a silver layer.

Claim 28 (new): A surface-mountable PTC thermistor according to Claim 21, wherein each of the terminals has a flat-plate shaped configuration and is made of stainless steel.